APPENDIX - E

FINAL VERSION OF THE DIAGNOSTIC TEST

DIAGNOSTIC TESTS FOR MATHEMATICS
(Please do all calculations on this test paper itself. Space for rough work is provided)

1. TEST OF BASIC SKILLS IN ARITHMETIC

A) Add the following:

i) $\begin{array}{r} 351 \\ +879 \\ \hline \end{array}$ ii) $\begin{array}{r} 432 \\ +\ 18 \\ \hline \end{array}$ iii) $\begin{array}{r} 200 \\ +564 \\ \hline \end{array}$

iv) $267 + 951 + 419$

B) Subtract the following:

i) $\begin{array}{r} 47 \\ -\ 31 \\ \hline \end{array}$ ii) $\begin{array}{r} 523 \\ -\ 215 \\ \hline \end{array}$ iii) $\begin{array}{r} 649 \\ -\ 15 \\ \hline \end{array}$ iv) $780 - 187$

C) Multiply the following:

i) $\begin{array}{r} 10 \\ \times\ 5 \\ \hline \end{array}$ ii) $\begin{array}{r} 810 \\ \times\ 20 \\ \hline \end{array}$ iii) 935×127 iv) $\begin{array}{r} 13 \\ \times\ 12 \\ \hline \end{array}$

D) Divide the following:

i) $36 \div 6 =$ ii) $525 \div 5 =$ iii) $48 \div 8 =$

iv) $1500 \div 3 =$ v) $125 \div 4 =$

E) Fill in the blanks:

i) $4 \times \_\_\_\_\_ = 1$ ii) $5 \div \_\_\_\_\_ = 1$

iii) $\frac{1}{9} \times \_\_\_\_\_ = 1$ iv) $\frac{2}{7} \div \frac{2}{7} = \_\_\_\_\_$

Rough Work

II. TEST OF BASICS IN ALGEBRA

Rough Work

A) Add the following

i) $a + a =$ _____

ii) $a + b + a + b + b =$ _____

iii) $xy + xy + 1 =$ _____ + _____

iv) $2y + 3x + x + y + 5x =$ _____ + _____

v) $x^2 + x^2 + x^2 =$ _____

vi) $a + b =$ _____ + _____

B) Simplify

i) $\frac{b \times b \times b}{b \times b} =$ _____

ii) $\frac{a \times b \times c \times a}{2 \times a \times b \times b} =$ _____

C) Fill in the blanks:

i) $5 \times b \times c =$ _____

ii) $4y =$ _____ x y

iii) $ab =$ _____ x _____

iv) _____ x _____ $= 2d + 2c$

v) $3(y + d) =$ _____ + _____

D) Which are the variables in the following: Put a '0' around it like this (34)

31, x, ab, $\frac{1}{2}$, 2.5, t, -4, $\frac{b}{c}$,

q, 10, r, m, 100, n, pq

Rough Work

III. TEST OF RATIONAL NUMBERS:

i) Which are the numerators in the following. Put a tick '✓' on it like this.

$\frac{6}{7}$, $\frac{12}{5}$, $\frac{11}{13}$, $\frac{2}{9}$, $\frac{5}{12}$

ii) $\frac{3}{4} \times \frac{2}{2} =$ _____

iii) Put the rational numbers from the following:
Put a ' ◯ ' around it, like this (2)

5, $\frac{-1}{4}$, $\frac{7}{9}$, 64 , -10 , $\frac{-2}{5}$, -3 ,

$\frac{6}{11}$, -25 , 31, $\frac{-2}{7}$, -12 , 15 , $\frac{9}{13}$

IV. TEST OF FRACTIONS:

Rough Work

A) (With same denominators)
Add the following:

i) $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} =$

ii) $\frac{1}{4} + \frac{1}{4} =$

iii) $\frac{2}{5} + \frac{4}{5} =$

iv) $\left(\frac{-1}{6}\right) + \left(\frac{-5}{6}\right) =$

v) $\left(\frac{-2}{3}\right) + \frac{5}{3} =$

B) Subtract the following:

$\left(\frac{-2}{3}\right) + \left(\frac{-1}{3}\right) =$

C) Divide the following:

$\frac{3}{7} \div \frac{3}{7} =$ _____

B) (With different denominators) Rough Work

1) Add the following:

i) $\frac{1}{4} + \frac{1}{3} =$

ii) $\frac{2}{5} + \frac{3}{4} =$

iii) $\left(\frac{-2}{3}\right) + \frac{1}{4} =$

2) Subtract the following:

$\left(\frac{-1}{5}\right) - \left(\frac{-1}{6}\right) =$

3) Divide the following:

$\frac{3}{5} \div \frac{6}{7} =$

V. TEST OF INDICES

1) Multiply using indices:

i) $1^3 \times 1^2 = 1(\quad) =$ _____

ii) $2^5 \times 2^5 \times 2^5 = 2^{(\quad)}$

iii) $3 \times 3 \times 3 \times 3 \times 3 \times 3 = 3^{(\quad)}$

iv) $5 \times 5 \times 5 =$ _____

vi) $(-1) = (-1) =$ _____

vii) $3^{(-2)} \times 3^{(-2)} = (\qquad)^{(\quad)}$

viii) $(-4) \times (-4) \times (-4) \times (-4) = (\qquad)^{(\quad)}$

2) $2^6 =$ _____ (Write in expanded form)

3) Pick out the base in the following. Put a tick '✓' on it, like this ✓

4^5 , 7^3 , 2^6 , 10^4

4) $(2^3)^4 = 2^{(\quad)}$

5) Pick out odd integers from the following. Put a circle ◯ around it like this (46)

26, 6, 9, 0, 4, 11, 17, 22, 33, 46, 100, 73

B) (With variable as base) Rough Work
Multiply using indices

i) $a \times a = a^{(\ )}$

ii) $a \times a \times a \times ab = a^{(\ )} b^{(\ )}$

iii) $xy \times xy = (xy)^{(\ )}$

iv) $(xy)^2 = x^{(\ )} y^{(\ )}$

v) $xy \times yz = xz =$

vi) $b^2 \times b^3 \times b^4 = b^{(\ )}$

vii) $\left(\frac{a}{b}\right)^2 = \frac{a^{(\ )}}{b^{(\ )}}$

viii) $\frac{X^4}{Y^4} = \left(\frac{x}{y}\right)^{(\ )}$

ix) $a^2 b^2 c^2 = (\quad)^{(\ )}$

x) $c \times c \times 2c = (\quad)^{(\ )}$

D) (With rational base)

1) Multiply using indices:

i) $\frac{1}{5} \times \frac{1}{5} \times \frac{1}{5} \times \frac{1}{5} =$ _____

ii) $\left(\frac{-2}{5}\right) \times \left(\frac{-2}{5}\right) = (\quad)^{(\ )}$

iii) $\left(\frac{2}{3}\right)^4 \times \left(\frac{2}{3}\right)^5 = (\quad)^{(\ )}$

2) Fill in the blanks:

i) $\left(\frac{-1}{4}\right)^3 =$ _____ ii) $\left(\frac{1}{3}\right)^2 =$ _____

iii) $\frac{1}{2^3} = 2(\quad)$ iv) $\frac{3^5}{4^5} =$

v) $\left[\frac{4^2}{3^2}\right]^5 \left[\frac{4}{3}\right]^{(\quad)}$

VI. TEST OF MONOMIAL – BINOMIAL MULTIPLICATION Rough Work
Multiply the following:

i) $a(x + 1)$

ii) $(a + b)2c$

iii) $(3x + y)\, z$

iv) $a(b + c)$

v) $(2x + 3y)\, 3r$

vi) $x(y - z)$

VII. TEST OF BINOMIAL – BINOMIAL MULTIPLICATION
Multiply the following:

i) $(x + 1)\,(x + 1)$

ii) $(a + b)\,(a + b)$

iii) $(2a + 1)\,(3a + 1)$

iv) $(3y - x)\,(2y + x)$

VIII. TEST OF BRACKET EXPANSION:
Expand the following:

i) $(a + b)^2$

ii) $(x + 1)^2$

iii) $(a + b)^3$

iv) $(x + 2)^3$

IX. TEST OF LINEAR EQUATIONS:
Fill in the blanks:

i) If $x + 1 = 0$ then $x =$ _____

ii) If $a = (-2)$ then $a + 2 =$ _____ $+ 2$

iii) Put '2' in place of 'x' in $x + 3$ $\therefore$ $x + 3 =$ _____ $+ 3$

iv) Find Value

a) If $y = 3$ then $y + 2 =$ _____ $+ 2$

b) If $y = -1$ then $y + 2 =$ _____ $+ 2$

v) If $3 - x = 0$, then $x =$ _____

vi) Put '(- 1)' in place of 'b' in $1 + b$
$\therefore \quad 1 + b = 1 +$ _____

vii) If $2x = 1$ then $x =$ _____

viii) If $a + 1 = 2$ then $a =$ _____

ix) If $2 + 3b = 8$ then $b =$ _____

Rough work